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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/937,904	11/09/2001	Leif Ramm-Schmidt	0696-0183P	5544
2292	7590	09/03/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			BHAT, NINA NMN	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 09/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/937,904

Applicant(s)

RAMM-SCHMIDT ET AL.

Examiner

N. Bhat

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 1-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11-9-2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

2. The disclosure is objected to because of the following informalities:

In the specification applicant has referred to the claims when describing the invention. Applicant is reminded that the claims are derived from the specification; the specification should teach the process for evaporating the solution as well as describing the evaporator and all of the elements comprising the invention and its cooperative relationship. The specification should not refer to the claims. Accordingly, on Page 3, delete lines 1-3, applicant is required to delete the reference to the claims starting with "Regarding the essential features....Claim 7 in particular."

Applicant is required to include the heading "Brief Description of the Drawings", according on Page 4, line 30, insert the heading --Brief Description of the Drawings--

3. Claims 2-17 are objected to because of the following informalities:

4. In all of the claims applicant has used "characterized in that" language. Applicant is suggested to amend the "characterized in that language" to --wherein-- which conforms more to US practice. This is a suggestion not a requirement. Further in claim 5, applicant has used "such as" language. The phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Applicant is suggested to avoid the recitation such as when drafting claims and positively recite that the he at exchange

elements are made of flexible plastic film material. Applicant is reminded that this is an objection not a rejection and the amendment to the claim is suggested and not required.

5. Claims 1-17 are deemed allowable.

6. The following is a statement of reasons for the indication of allowable subject matter: The invention relates to a process for evaporating a solution, comprising feeding the solution to heat transmission surfaces of parallel plate-formed heat exchanger elements of an evaporator from supply units which spread the solution to the top of the surfaces so that the solution flows downwards, removing the part of the solution remaining from the lower end of the evaporator, and recycling the remaining part of the solution back to the heat transmission surfaces for re-evaporation, the recycling comprising conducting the solution to a liquid distribution space common to the heat exchanger elements, separating the precipitate from the solution in the distribution space, the solution forming an upward flow in the distribution space and passing the solution to the supply units for being spread onto the transmission surfaces wherein the recycled solution is fed to the liquid distribution space from a downwardly curved condition as a curved flow, to separate the precipitate under the combined effect of gravity and centrifugal force, and the precipitate as separated is discharged to an exhaust pipe from the bottom of the liquid distribution space. The invention further relates to an evaporator comprising a jacket, parallel upright plate heat exchanger elements fitted inside the jacket the elements having upright heat transmission surfaces, supply units for spreading a solution to be evaporated to the top of heat transmission surfaces to flow downwards on the surfaces, a liquid distribution space common to the

heat exchange elements for feeding the solution the supply units and means for removing the part of the solution remaining from the evaporation and precipitate formed in connection with the evaporation from the lower end of the evaporator and for recycling the remaining part of the solution back to the heat transmission surfaces for re-evaporation, the recycling means comprise a conduit connecting the lower end of the evaporator with the liquid distribution space, the space having means for separating the precipitate from the solution being recycled, wherein the conduit for recycling the solution forms a downward curve connected to the liquid distribution space, to feed the solution to the spaced as a curved flow and to separate the precipitate under the combined effect of gravity and centrifugal force, and that an exhaust pipe for discharging the precipitate as separated starts from the bottom of the liquid distribution space.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. WO 95/08381 teaches a liquid distribution for a membrane distiller. The membrane distiller comprises a number of bag-like distillation elements of membrane material, which operate by evaporating the liquid conducted to the outer surfaces of the elements using the heat transfer from streams condensing inside the elements. The liquid distributor consists of a batten at the upper end of the distillation element provided with parallel feeding channels for distributing the vaporized liquid on the outer surface of the element. The reference does not teach or suggest a liquid distributor which spreads the solution to the top of the surfaces so that the solution flows downwards, removing the part of the solution remaining from the lower end of the

evaporator, and recycling the remaining part of the solution back to the heat transmission surfaces for re-evaporation, the recycling comprising conducting the solution to a liquid distribution space common to the heat exchanger elements, separating the precipitate from the solution in the distribution space, the solution forming an upward flow in the distribution space and passing the solution to the supply units for being spread onto the transmission surfaces wherein the recycled solution is fed to the liquid distribution space from a downwardly curved condition as a curved flow, to separate the precipitate under the combined effect of gravity and centrifugal force, and the precipitate as separated is discharged to an exhaust pipe from the bottom of the liquid distribution space. Pogson teaches a constant velocity uniform flow evaporator header but does not teach or suggest a fluid distributor which spreads the solution to the top of the surfaces so that the solution flows downwards, removing the part of the solution remaining from the lower end of the evaporator, and recycling the remaining part of the solution back to the heat transmission surfaces for re-evaporation, the recycling comprising conducting the solution to a liquid distribution space common to the heat exchanger elements, separating the precipitate from the solution in the distribution space, the solution forming an upward flow in the distribution space and passing the solution to the supply units for being spread onto the transmission surfaces wherein the recycled solution is fed to the liquid distribution space from a downwardly curved condition as a curved flow, to separate the precipitate under the combined effect of gravity and centrifugal force, and the precipitate as separated is discharged to an exhaust pipe from the bottom of the liquid distribution space. WO 92/10264 teaches a

distillation apparatus which distills sea water into fresh water using a plurality of flat, bag-like elements formed from a thin film of plastic film placed one against the other, the elements serving as heat exchangers between a vaporizing liquid flowing along the exterior surfaces of the elements and a condensing vapor directed to the inside of the elements. At the upper end of each bag like element is a honeycomb structure end strip having substantially the width of the element, the strip containing parallel feed ducts separated from each other by partition walls, the ducts distributing the liquid to be evaporated over the entire width of the element surface. The reference does not teach or suggest which spreads the solution to the top of the surfaces so that the solution flows downwards, removing the part of the solution remaining from the lower end of the evaporator, and recycling the remaining part of the solution back to the heat transmission surfaces for re-evaporation, the recycling comprising conducting the solution to a liquid distribution space common to the heat exchanger elements, separating the precipitate from the solution in the distribution space, the solution forming an upward flow in the distribution space and passing the solution to the supply units for being spread onto the transmission surfaces wherein the recycled solution is fed to the liquid distribution space from a downwardly curved condition as a curved flow, to separate the precipitate under the combined effect of gravity and centrifugal force, and the precipitate as separated is discharged to an exhaust pipe from the bottom of the liquid distribution space. Ramm-Schmidt et al. teach a method including evaporating aqueous solutions containing ammonia but does not teach or suggest which spreads the solution to the top of the surfaces so that the solution flows downwards, removing

the part of the solution remaining from the lower end of the evaporator, and recycling the remaining part of the solution back to the heat transmission surfaces for re-evaporation, the recycling comprising conducting the solution to a liquid distribution space common to the heat exchanger elements, separating the precipitate from the solution in the distribution space, the solution forming an upward flow in the distribution space and passing the solution to the supply units for being spread onto the transmission surfaces wherein the recycled solution is fed to the liquid distribution space from a downwardly curved condition as a curved flow, to separate the precipitate under the combined effect of gravity and centrifugal force, and the precipitate as separated is discharged to an exhaust pipe from the bottom of the liquid distribution space.


Koistinen et al.['020 and 141] teach a distillation apparatus which includes a plurality of flat bag like elements formed from thin film material. EP 0 639 096 teach an apparatus for the evaporation of a liquid and its subsequent condensation. Ramm-Schmidt et al.'410 teach a heat exchanger wherein the vapor is fed onto the heat exchanger surfaces and includes a vapor distributor. EP 0 639 097 teach an apparatus for the evaporation of a liquid and for its subsequent condensation using a apparatus comprising plurality of flat, bag-like elements of a thin film material placed one against the other. the elements serving as heat exchangers between a vaporizing liquid which flows along the exterior surfaces of the elements and a condensing vapor which has be directed to the inside of the elements. Chevallier teaches a heat exchanger for use as an evaporator in a motor vehicle air conditioning system. Acker et al. teach a plate for

evaporative heat exchanger and evaporative heat exchanger. Hartig '098 and '601 teach a falling film evaporator.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


N. Bhat
Primary Examiner
Art Unit 1764